Volunteer Lake Assessment Program Individual Lake Reports

BRADLEY LAKE, ANDOVER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,624	**Max. Depth (m):**	20.1	**Flushing Rate (yr^{-1}):**	1.4
Surface Area (Ac.):	169	**Mean Depth (m):**	6.1	**P Retention Coef:**	0.58
Shore Length (m):	4,500	**Volume (m^3):**	4,174,000	**Elevation (ft):**	828

TROPHIC CLASSIFICATION

Year	Trophic class
1993	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

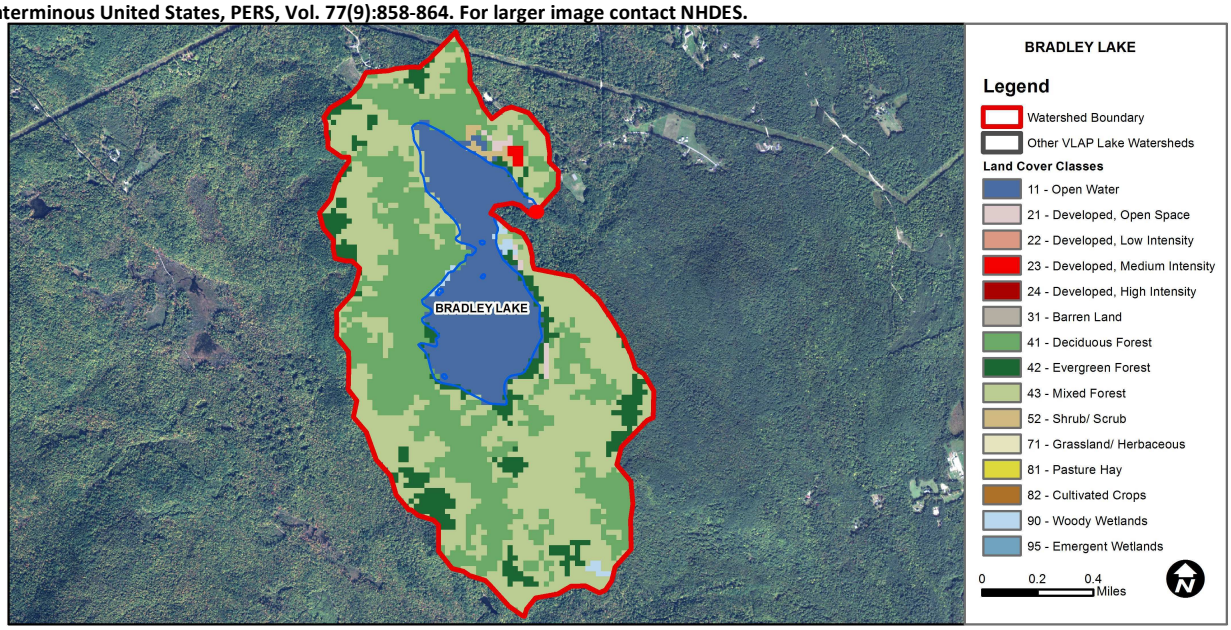
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Encouraging	<5 samples and median is < threshold. More data needed.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	No Data	No Data for this parameter.
	Chlorophyll-a	Encouraging	< 10 samples and no exceedance of criteria. More data needed.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

BRADLEY LAKE - CAMP MARLYN BEACH	E. coli	No Data	No Data for this parameter.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	17.1	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	0.51	Deciduous Forest	32.58	Pasture Hay	0
Developed-Low Intensity	0	Evergreen Forest	8.36	Cultivated Crops	0
Developed-Medium Intensity	0.23	Mixed Forest	40.26	Woody Wetlands	0.62
Developed-High Intensity	0	Shrub-Scrub	0.46	Emergent Wetlands	0

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
BRADLEY LAKE, ANDOVER, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were low and less than the state median on each sampling event. Average chlorophyll levels increased slightly from 2012 potentially due to the above average rainfall and stormwater runoff.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity levels were very low and much less than the state median. Inlet conductivity levels increased slightly as the summer progressed likely due to lower tributary flows.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were low, remained stable throughout the summer, and were much less than the state median. Inlet Phosphorus levels were slightly higher in September. A recent rain event may have flushed sediment and/or organic matter downstream as a small amount was noted in the sample which could have contributed to the slightly higher phosphorus. Outlet phosphorus was slightly higher in August and a moderate amount of sediment was observed in the sample.
- **TRANSPARENCY:** Transparency was lower in August likely due to a slight increase in algal growth, but improved in September when algal growth was lower.
- **TURBIDITY:** Epilimnetic turbidity was slightly elevated in June potentially due to significant early summer rainfall and stormwater runoff. Inlet turbidity was slightly elevated in June and September potentially due to storm events and/or low flow conditions as a small amount of sediment and/or organic matter was noted in the samples. Outlet turbidity was elevated in June and August and a moderate amount of sediment was noted in the samples.
- **PH:** Deep spot and tributary pH levels were less than desirable range of 6.5 – 8.0 units.
- **RECOMMENDED ACTIONS:** Maintain monitoring program to develop a comprehensive data set to better assess seasonal and historical trends. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff and reducing erosion in the watershed. DES' "Homeowner's Guide to Stormwater Management" is a great resource.

Table 1. 2013 Average Water Quality Data for BRADLEY LAKE

Station Name	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m NVS	Turb. ntu	pH
Epilimnion	2.37	2.61	15.7	5	4.73	1.02	6.09
Metalimnion			15.7	5		0.46	6.16
Hypolimnion			15.7	6		0.61	6.22
Inlet			18.2	7		1.09	6.21
Outlet			15.9	8		2.23	6.28

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	N/A	Ten consecutive years of data necessary.	Chlorophyll-a	N/A	Ten consecutive years of data necessary.
Conductivity	N/A	Ten consecutive years of data necessary.	Transparency	N/A	Ten consecutive years of data necessary.
			Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary.